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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/995,677	11/29/2001	Masaki Nakamichi	Q66518	1015

7590

12/13/2002

SUGHRUE, MION, ZINN, MACPEAK & SEAS  
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EXAMINER

OLSEN, KAJ K

ART UNIT

PAPER NUMBER

1744

DATE MAILED: 12/13/2002

*Handwritten signature/initials*

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/995,677

Applicant(s)

NAKAMICHI ET AL.

Examiner

Kaj Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because applicant misspells --judgement-- at S44 of fig. 4.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claims 5-8 are drawn to method for diagnosing a fault in the O2 sensor, but many of the limitations drawn to the method are passive and are not clearly defined steps for performing the stated method. For example, in claim 5, the limitations drawn to the "state judging step" and the "fault diagnosis step" appear to be the identical limitations utilized to define the apparatus in claim 1, except for the substitution of the term "state judging step" for "state judging portion", and the term "fault diagnosis step" for "fault diagnosis portion". As a result, a number of the method limitations are only passively defined. For example, claim 5 specifies that the judging is on the basis of a voltage of an output signal of the O2 sensor. Does this mean that measuring an output signal of an O2 sensor is part of the claimed method? Similarly in claim 6, is the

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diagnosing a fault on the O2 on the basis of a change in the level of an O2 sensor as a result of a change in the input resistance indicate that --changing an input resistance to the O2 sensor-- and --measuring a change in the output signal of the O2 sensor-- part of the claimed invention?

Similar instances of indefiniteness can be found elsewhere in claims 5-8. The examiner recommends the applicant define the method for diagnosing a fault using a series of explicitly defined method steps.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3-5, 7 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Jung (USP 5,724,953).

7. With respect to claim 1, Jung discloses a fault diagnosis apparatus comprising an O2 sensor for detecting a concentration of oxygen contained in the exhaust of an internal combustion engine (col. 1, lines 11-16) and a feedback control portion for controlling a quantity of fuel supplied to the internal combustion engine via feedback control according to an output signal of the O2 sensor (col. 1, lines 34-36). Jung also discloses structure for a judgment portion where it is determined whether or not the sensor is in an activated or an inactivated state (col. 3, lines 28-34). This would read on the claim language requiring a state judging portion for judging whether the O2 sensor is in an active state or in an inactive state on the basis of a voltage of the output

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signal of the O2 sensor. Jung further discloses a fault diagnosing portion where the fuel injected is to be increased and the O2 sensor signal is monitored again to determine if the signal has any fault associated with it (col. 3, line 35 through col. 4, line 6). This fault diagnosis occurs after the sensor has been determined to be inactive (col. 3, lines 31 and 32).

8. With respect to claim 3, Jung activates the fault diagnosis every time the sensor is determined to be inactive (see fig. 2).

9. With respect to claim 4, see col. 4, lines 5 and 6.

10. With respect to claim 5 as best understood, Jung discloses a fault diagnosis method comprising a step of judging whether or not the sensor is in an activated or an inactivated state (col. 3, lines 28-34). This would read on the claim language requiring a state judging step for judging whether the O2 sensor is in an active state or in an inactive state on the basis of a voltage of the output signal of the O2 sensor. Jung further discloses a step of fault diagnosing where the fuel injected is to be increased and the O2 sensor signal is monitored again to determine if the signal has any fault associated with it (col. 3, line 35 through col. 4, line 6). This fault diagnosis occurs after the sensor has been determined to be inactive (col. 3, lines 31 and 32).

11. With respect to claim 7 as best understood, Jung activates the fault diagnosis every time the sensor is determined to be inactive (see fig. 2).

12. With respect to claim 8 as best understood, see col. 4, lines 5 and 6.

### ***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 2 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jung in view of Nakamichi (USP 5,685,284).

16. Jung discloses all the limitations of claims 2 and 6, but does not explicitly identify a fault diagnosis portion or a fault diagnosing step including an input resistance changing portion. Nakamichi, in an alternative fault diagnosis apparatus, teaches a couple of different fault diagnosing portions. One portion (termed the "first decision means") determines a fault based on forcibly changing the fuel supplied to the engine and monitoring the O2 sensor response (like the fault diagnosing portion of Jung). The other portion (termed the "second decision means") determines a fault based on changing an input resistance so as to cause a change in the level of the output signal of said O2 sensor (col. 2, lines 2-10 and lines 34-49). Nakamichi further indicates that the second decision means is better at identifying abnormalities than the first decision means because it can clearly identify faults such as ground-faults or wire bearing (col. 2, lines 6-10 and lines 29-33). It would have been obvious to one of ordinary skill in the art at

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the time the invention was being made to utilize the teaching of Nakamichi for the apparatus or method of Jung in order to better identify abnormalities in the O2 sensor during the fault diagnosis operation.

### *Conclusion*

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Okamoto, Schnaibel, Kojima, and Mieno all disclose alternate fault diagnosis methods and apparatuses.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (703) 305-0506. The examiner can normally be reached on Monday through Thursday from 8:30 AM-6:00 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Robert Warden, can be reached at (703) 308-2920.

When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for regular communications is (703) 305-3599 and the fax number form after-final communications is (703) 305-5408.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0661.

A handwritten signature in black ink, appearing to read 'Kaj K. Olsen', with a stylized flourish extending to the right.

Kaj K. Olsen  
Patent Examiner

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December 11, 2002